Operator – Pultrusion (Composites)

☑ Short Term Training (STT) ☐ Long Term Training (LTT) ☑ Apprenticeship
☑ Upskilling ☐ Dual/Flexi Qualification ☐ For ToT ☐ For ToA
☑General ☐ Multi-skill (MS) ☐ Cross Sectoral (CS) ☑ Future Skills ☐ OEM

NCrF/NSQF Level: 3

Submitted By:

Textile Sector Skill Council

Contact Details:
Dr. Swapna Mishra
Chief Executive Officer,
M: 98182-17453

Textile Sector Skill Council,
Unit 1011-1013, 10th Floor, Ambadeep Building,
14 Kasturba Gandhi Marg,
New Delhi – 110001.

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Section 1: Basic Details

1.	**Qualification Name**	Operator – Pultrusion (Composites)	
2.	**Sector/s**	Technical Textiles	
3.	**Type of Qualification ☑ New ☐ Revised ☐ Has Electives/ Options ☐ OEM**	**NQR Code & version of the existing /previous qualification:** Not Applicable	**Qualification Name of the existing/previous version:** Operator – Pultrusion (Composites)
4.	**a. OEM Name** **b. Qualification Name (Wherever applicable)**	NA NA	
5.	**National Qualification Register (NQR) Code & Version**	QG-03-TX-04285-2025-V1-TSC	**6. NCrF/NSQF Level: 3**
7.	**Award (Certificate/Diploma/Advance Diploma/ Any Other** (Wherever applicable specify multiple entry/exits also & provide details in annexure)	Certificate	
8.	**Brief Description of the Qualification**	The individual at work is responsible for selecting raw materials, right tooling and processes, and ensuring the proper operation of pultrusion machines for the quality manufacturing of Fiber Reinforced Polymer (FRP) products. The key Duties include preparing and mixing resins, monitoring pot life, viscosity of the binding system, and using it within prescribed time, handling and aligning fibers, monitoring, and adjusting machine settings, performing quality checks, and adhering to safety protocols to produce high-quality FRP products.	

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<table>
<tr><td>9.</td><td>Eligibility Criteria for Entry for a Student/Trainee/Learner/Employee</td><td colspan="2">a. Entry Qualification & Relevant Experience:

<table>
<tr><th>S. No.</th><th>Academic/Skill Qualification (with Specialization - if applicable)</th><th>Relevant Experience (with Specialization - if applicable)</th></tr>
<tr><td>1</td><td>10th or Equivalent</td><td>No Experience required</td></tr>
<tr><td>2</td><td>9th or Equivalent</td><td>1.5 years relevant experience</td></tr>
<tr><td>3</td><td>8th or Equivalent</td><td>3 years relevant experience</td></tr>
<tr><td>4</td><td>5th or Equivalent</td><td>6 years relevant experience</td></tr>
</table>

18 Years</td></tr>
<tr><td>10.</td><td>Credits Assigned to this NOS-Qualification, Subject to Assessment (as per National Credit Framework (NCrF))</td><td>10 Credits</td><td>11. Common Cost Norm Category (I/II/III) (wherever applicable): I</td></tr>
<tr><td>12.</td><td>Any Licensing Requirements for Undertaking Training on This Qualification</td><td colspan="2">Not Applicable</td></tr>
<tr><td>13</td><td>Training Duration by Modes of Training Delivery (Specify Total Duration as per selected training delivery modes and as per requirement of the qualification)</td><td colspan="2">☑ Offline Only ☐ Online Only ☐ Blended

<table>
<tr><th>Training Delivery Mode</th><th>Theory (Hours)</th><th>Practical (Hours)</th><th>Total (Hours)</th></tr>
<tr><td>Classroom (offline)</td><td>75</td><td>225</td><td>300</td></tr>
<tr><td>Online</td><td>-</td><td>-</td><td>-</td></tr>
</table>

(Refer Blended Learning Annexure for details)</td></tr>
<tr><td>14.</td><td>Aligned to NCO/ ISCO Code/s (if no code is available mention the same)</td><td colspan="2">NCO-2015/8151.99</td></tr>
</table>

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15.	**Progression Path After Attaining the Qualification, wherever applicable** *(Please show Professional and Academic progression)*	Pultrusion supervisor- Composites	
16.	**Other Indian languages in which the Qualification & Model Curriculum are being submitted**	Nil	
17.	**Is similar NOS available on NQR-if yes, justification for this qualification**	**☐ Yes ☑ No URLs of similar Qualifications:**	
18.	**Is the NOS Amenable to Persons with Disability**	**☐ Yes ☑ No If "Yes", specify applicable type of Disability:**	
19.	**How participation of women will be encouraged?**	This Qualification/NOS is made suitable for all categories of learners including the individuals, Students, professionals with the prescribed entry qualification.	
20.	**Are Greening/ Environment Sustainability Aspects Covered (Specify the NOS/Module which covers it)**	**☑Yes ☐ No** TSC/N9018 - Maintain 5S at work premises: Sort, Set in, Order, Shine, Standardize and Sustain TSC/N9019 - Follow machine, safety and organizational guidelines in pultrusion department	
21	**Is Qualification Suitable to be Offered in Schools/Colleges**	Schools ☐ Yes ☑ No Colleges ☐Yes ☑ No	
22	**Name and Contact Details Submitting / Awarding Body SPOC** *(In case of CS or MS, provide details of both Lead AB & Supporting ABs)*	**Name: Mr. Vignesh Raja** **Email: raja@texskill.in** **Contact No.: 7502954383** **Website: https://texskill.in/**	
23.	**Final Approval Date by NSQC: 08.05.2025**	**24. Validity Duration: 3 years**	**25. Next Review Date: 08.05.2028**

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Section 2: Module Summary

NOS/s of Qualifications

(In exceptional cases these could be described as components)

Mandatory NOS/s:

Specify the training duration and assessment criteria at NOS/ Module level. For further details refer curriculum document.

Th.-Theory **Pr.**-Practical, **Proj.**- Project

S. No.	NOS and Module Details	NOS/Module Code & version (if applicable)	Core/ Non Core	NCrF/ NSQF Level	Credit as per NCrF	Training Duration			Assessment Marks					
						Th.	Pr.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (if applicable)
1.	Carry out Shift change responsibilities in Pultrusion Department	TSC/N8105, V 1.0	Core	3	0.5	5	10	15	30	70			100	13
2.	Preparation for fabrication of pultruded composite parts	TSC/N8106, V 1.0	Core	3	2.5	30	45	75	50	100			150	18
3.	Carry out Pultrusion Production Activity	TSC/N8107, V 1.0	Core	3	5	18	132	150	100	150			250	31
4.	Maintain 5S at work premises: Sort, Set in, Order, Shine, Standardize and Sustain	TSC/N9018, V 1.0	Core	3	0.5	5	10	15	30	70			100	13
5.	Follow machine, safety and organizational guidelines in pultrusion department	TSC/N9019, V 1.0	Non Core	3	0.5	5	10	15	50	100			150	19
6.	Employability Skills	DGT/VSQ/N0101,V 1.0	Non Core	3	1	12	18	30	20	30			50	6
	Total Duration (in hours)/Total marks				**10**	**75**	**225**	**300**	**280**	**520**			**800**	**100**

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Elective NOS/s:

S. No	NOS/Module Name	NOS/Module Code & Version *(if applicable)*	Core/ Non-Core	NCrF/NSQF Level	Credits as per NCrF	Training Duration (Hours)			Assessment Marks					
						Th.	Pr.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) *(if applicable)*
1.	NA													
2.	NA													
Duration (in Hours) / Total Marks														

Optional NOS/s:

S. No	NOS/Module Name	NOS/Module Code & Version *(if applicable)*	Core/ Non-Core	NCrF/NSQF Level	Credits as per NCrF	Training Duration (Hours)			Assessment Marks					
						Th.	Pr.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) *(if applicable)*
1.	NA													
2.	NA													
Duration (in Hours) / Total Marks														

Assessment - Minimum Qualifying Percentage

Please specify any one of the following:

Minimum Pass Percentage – Aggregate at qualification level: **50%**

Pass Percentage of the Qualification is scheme specific, unless specified by scheme, it is 50% or else scheme guidelines will override it.

(Every Trainee should score specified minimum aggregate passing percentage at qualification level to successfully clear the assessment.)

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Section 3: Training Related

1.	**Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	Minimum Diploma with 3 years of experience as Composite Manufacturer/ Proprietor/ Entrepreneur in composite MSME Sector/ Educator/trainer, with Successfully passed Trainer Qualification MEP/Q2601, v2.0– Trainer (VET and Skills), Minimum pass percentage 80 percent and TSC/Q8102, v1.0 Operator - Pultrusion (Composites), Minimum pass percentage 80 percent
2.	**Master Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	Diploma/Degree/Masters/PhD in Mechanical/Production/Chemical/textile engineering or relevant branches with at least 03 years of experience in composite sector with minimum 2 years in teaching/conducting training in Textile Research Associations, CoEs, composite industries
3.	**Tools and Equipment Required for the Training**	☑Yes ☐No *(If "Yes", details to be provided in Annexure)*
4.	**In Case of Revised NOS, details of Any Upskilling Required for Trainer**	Not Applicable

Section 4: Assessment Related

1.	**Assessor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	Graduate with 3 years of experience as Composite Manufacturer/Proprietor/ Entrepreneur in composite MSME Sector/ Educator/trainer, with Successfully passed MEP/Q2701, v2.0 – Assessor (VET and Skills), Minimum pass percentage 80 percent and TSC/Q8102, v1.0 Operator - Pultrusion (Composites), Minimum pass percentage 80 percent
2.	**Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines),* *(wherever applicable)*	UG in any field

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3.	**Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years)** *(as perNCVET guidelines)*	Diploma/ Degree/ Masters/ PhD in Mechanical/ Production/ Materials/ textile/ chemical Engineering with Minimum 5 years of experience in relevant sector with minimum 02 years in teaching/conducting training/assessment in Textile Research Associations, CoEs, Govt organizations/ composite industries
4.	**Assessment Mode** *(Specify the assessment mode)*	Offline
5.	**Tools and Equipment Required for Assessment**	☐ Same as for training ☑ Yes ☐ No *(details to be provided in Annexure-if it is different for Assessment)*

Section 5: Evidence of the Need for the Qualification

Provide Annexure/Supporting documents name.

1.	Latest Skill Gap Study (not older than 2 years) (Yes/No): Yes. Link – Click Here
2.	Latest Market Research Reports or any other source (not older than 2 years) (Yes/No): Yes Link – Click Here
3.	Government /Industry initiatives/ requirement (Yes/No): Yes, National Technical Textile Mission
4.	Number of Industry validation provided: 05
5.	Estimated number of people to be trained: 450
6.	Evidence of Concurrence/Consultation with Line/State Departments (In case of regulated sectors): (Yes/No): Yes, Awaiting

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Section 6: Annexure & Supporting Documents Check List

Specify Annexure Name / Supporting document file name

1.	**Annexure:** NCrF/NSQF level justification based on NCrF/NSQF descriptors *(Mandatory)*	Attached. Annexure 1
2.	**Annexure:** List of tools and equipment relevant for NOS *(Mandatory, except in case of online course)*	Attached. Annexure 2
3.	**Annexure:** Industry Validations Summary	Attached. Annexure 3
4.	**Annexure:** Training and Employment details	Attached. Annexure 4
5.	**Annexure:** Blended Learning *(Mandatory, in case selected Mode of delivery is Blended Learning)*	No
6.	**Annexure:** Detailed Assessment Criteria (Mandatory)	Attached. Annexure 6
7.	**Annexure:** Assessment Strategy *(Mandatory)*	Attached. Annexure 7
8.	**Annexure:** Acronym and Glossary *(Optional)*	Attached. Annexure 8
9.	**Supporting Document:** Model Curriculum *(Mandatory – Public view)*	Attached. Annexure 9
10.	**Supporting Document:** Career Progression (Mandatory - Public view)	Attached. Annexure 10
11.	**Supporting Document:** Occupational Map (Mandatory)	Attached. Annexure 11
12.	**Supporting Document:** Assessment SOP (Mandatory)	Attached. Annexure 12
13.	Any other document you wish to submit:	NA

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Annexure 1: Evidence of Level

NCrF/NSQF Level Descriptors	Key requirements of the job role/ outcome of the qualification	How the job role/ outcomes relate to the NCrF/NSQF level descriptor	NCrF/NSQF Level
Professional Theoretical Knowledge/Process	**Range of knowledge** ● Possesses knowledge involving a defined range of standard procedures employed in Pultrusion operation. ● Understands the basic concept of timely delivery and Quality. ● Can interpret the available information & communicate the details related to pultrusion composite products. ● Basic knowledge of collecting and organizing information for problem identification and solution related to the pultrusion operation. ● Understands the basic financial and ● Uses limited discretion and judgement over a range of known responses to familiar to the pultrusion composite production	As per the various performance criteria mentioned in the previous column, the Operator - Pultrusion (Composites) works in a familiar, predictable, and routine situation with clear knowledge of the pultrusion process. Hence NSQF Level is 3	NSQF Level 3
Professional and Technical Skills/ Expertise/ Professional Knowledge	**Range of technical skills** ● A range of skills and technical capabilities of carrying out a Pultrusion processes and procedures within the range of familiar contexts ● The ability to gain, and where relevant apply a range of knowledge, skills and understanding required for the composite production.	As per the various performance criteria mentioned in the previous column, the Operator - Pultrusion (Composites) exhibits technical expertise in the pultrusion composite production. Hence NSQF Level is 3	NSQF Level 3

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	• Has the required skills for Identification of the problem and issues within the range of familiar contexts and generate possible solution. • Skills to identify the relevant tools and pultrusion composite materials in given context • Possesses composite production operational knowledge and understanding of the work/ job. • Skill to deliver pultrusion composite production job/work with reasonable precision.		
Employment Readiness & Entrepreneurship **Skills & Mind-set/Professional Skill**	**Team readiness & Enterpreurial readiness** • Working as a member of a team/ within a team. Display Personal Motivation. Positive Attitude & Passion for Work • Good skills in written and oral communication with some clarity, basic knowledge of Language to support such communication. • Intermediate literacy and Numeracy skills • Skills for workshop calculations and basic of arithmetic and algebraic principles. • Have broader Employability Skills including self-employment and mini-entrepreneurship skills creating job for more than 1 person. • Can use digital tools, has basic Financial and Digital literacy, Aadhar and Mobile	As per the various performances, knowledge and skills criteria mentioned in the previous cell, the Pultrusion operator exhibit employment readiness qualities such as clear written/ communication skills, basic mathematical ability, and usage of digital tools required for the pultrusion composite production. Hence NSQF Level is 3	NSQF Level 3

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Broad Learning Outcomes/ Core Skill	**Carry out Range of tasks and may provide range of solutions:** ● The candidate must be able to carry out job/ work/ tasks/ /small project/assignments in a familiar, predictable, routine, situation of clear choice in the pultrusion composite production. ● Focus on range of application of standard procedures or operations in production/ services. ● Able to identify/ anticipate the problems and possible range of solutions in production/ services ● Tasks are mostly performed by own and require little instructions and supervision. ● Understands all safety & general hygiene norms and environmental aspects, together with Risks.	As per the various performance criteria mentioned in the previous cell, the Pultrusion operator is able to recall and demonstrate practical skill, perform routine and repetitive skills in narrow range of application, using appropriate rule and tool. Hence NSQF Level is 3	NSQF Level 3
Responsibility	**Accountable/ responsible - Jr. Technician & Technician** ● Takes responsibility for delivery and quality of own work and tangible output. ● At level 3.0 the candidate works as a skilled worker/ technician. ● Take work from the helpers or assistants and collaboratively work with junior technicians. ● Able to assist in the planning of the routine and predictable tasks within a specific field.	The Pultrusion operator demonstrates responsibility for his own work and learning. Hence NSQF Level is 3	NSQF Level 3

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Annexure 2: Tools and Equipment

List of Tools and Equipment

Sr. No	Equipment Name	Minimum number of Equipment required (per batch of 30 trainees)
1.	Pultrusion Machine	1
2.	Resin Kitchen	1
3.	Resin Mixture	1
4.	Mold/Tool (each for different shape and size)	5
5.	Viscometer (for testing purpose)	1
6.	Density meter (for testing purpose)	1
7.	Universal Testing Machine (for testing purpose)	1
8.	Hardness testing (for testing purpose)	1
9.	Muffle furnace (for testing purpose)	1

Batch Size: 30

Classroom Aids

The aids required to conduct sessions in the classroom are:

1. Charts
2. Seating capacity for 30 candidates
3. Posters
4. Computer/ Laptop Specification
5. Projector
6. Scanner
7. White/black/ digital board
8. Printer

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Annexure 3: Industry Validations Summary

S. No	Organization Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID	LinkedIn Profile *(if available)*
1	Arvind Advance Materials	Mr. Samir Agarwal	CEO	Arvind limited-Advanced Material Division PO Khatraj, Tal Kalol, Gandhinagar-382721, Gujarat	+91-2794-675687		
2	Reliance Industries Limited	Mr. Pawan Tyagi	Business Head-Reliance Composites Solutions	Reliance Industries Limited Asoj, Vadodara-Halol Highway Vadodara, Gujarat			
3	Indore Composites (P) Ltd.	Mr. Mukesh Sanghvi	Managing Director	Indore Composites Pvt. Ltd. 807, Penimsula Corporate Park, Lower Parel (W), Mumbai	9867670025		
4	Fibro Grats Pvt. Ltd.	Mr. Tarun Surana	CEO	Fibro Gras Pvt Ltd 64/1/3/5 SK Compound Lasudia Mori Dewas Naka, Indore-452010	9820262129		
5	JRD Composites Product Private Limited	Mr. Sunil Gupta	Director	JRD Composites Product Private Limited 303-304A, Spaze Platinum Tower, Sohan Road, Gurgaon, Haryana-122018	9354031945		

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Annexure 4: Training & Employment Details

Year	Estimated Training # of Total Candidates	Estimated training # of Women	Estimated training # of People with Disability
2026	450	90	NA
2027	450	90	NA
2028	450	90	NA

Training, Assessment, Certification, and Placement Data for previous versions of qualifications:

		Total Candidates				Women				People with Disability			
Qualification Version	Year	Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed
-	-	-	-	-	-	-	-	-	-	-	-	-	-

Applicable for revised qualifications only, data to be provided year-wise for past 3 years.

List Schemes in which the previous version of Qualification was implemented: NIL

Content availability for previous versions of qualifications:

☐ Participant Handbook ☐ Facilitator Guide ☐ Digital Content ☐ Qualification Handbook ☐ Any Other:

Languages in which Content is available: NA

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Annexure 5: Blended Learning

NA

Blended Learning Estimated Ratio & Recommended Tools:

Not Applicable

Refer NCVET "Guidelines for Blended Learning for Vocational Education, Training & Skilling" available on:
https://ncvet.gov.in/sites/default/files/Guidelines%20for%20Blended%20Learning%20for%20Vocational%20Education,%20Training%20&%20Skilli ng.pdf

S. No.	Select the Components of the NOS	List Recommended Tools – for all Selected Components	Offline: Online Ratio
1	☐Theory/ Lectures - Imparting theoretical and conceptual knowledge	NA	NA
2	☐Imparting Soft Skills, Life Skills and Employability Skills /Mentorship to Learners	NA	NA
3	☐Showing Practical Demonstrations to the learners	NA	NA
4	☐Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training	NA	NA
5	☐Tutorials/ Assignments/ Drill/ Practice	NA	NA
6	☐Proctored Monitoring/ Assessment/ Evaluation/ Examinations	NA	NA
7	☐On the Job Training (OJT)/ Project Work Internship/ Candidate Training	NA	NA

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Annexure 6: Detailed Assessment Criteria

Module	Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
TSC/N8105: Carry out Shift Change Responsibilities in Pultrusion Department	*Taking charge of shift from pultrusion operator*	**14**	**33**	-	-
	PC 1. Come at least 10-15 minutes earlier to the work place	2	5	-	-
	PC 2. Get instructions from supervisor	2	5	-	-
	PC 3. Verify the operational status of the pultrusion machine and ancillary equipment.	2	5	-	-
	PC 4. Review the shift logbook for updates, pending tasks, and machine settings	2	5	-	-
	PC 5. Check the availability of raw materials, tools, and consumables required for the shift.	2	5	-	-
	PC 6. Wear personal protective equipment (PPE) and ensure all safety measures are in place	2	4	-	-
	PC 7. Inspect the workspace to confirm cleanliness and compliance with 5S principles	2	4	-	-
	Handing over the shift to operator	**16**	**37**	-	-
	PC 8. Provide a detailed handover report to the next operator, including production updates, machine settings, and any maintenance issues	2	5	-	-
	PC 9. Highlight any critical incidents, deviations, or quality concerns encountered during the shift.	2	5	-	-
	PC 10. Store all tools and materials in their designated locations	2	5	-	-
	PC 11. Confirm that the machine and work area are left in a safe and operational state	2	4	-	-
	PC 12. Update the shift logbook with accurate information for continuity	2	5	-	-
	PC 13. Get clearance from the incoming counterpart before leaving the work place	2	5	-	-
	PC 14. Handover the shift to the incoming shift operator as per standard protocol	2	4	-	-

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	PC 15. report to his/ her shift superiors as well as that of the incoming shift operator in case his/ her counterpart doesn't report for the incoming shift	2	4	-	-
	NOS Total	**30**	**70**	-	-
Module	**Assessment Criteria for Outcomes**	**Theory Marks**	**Practical Marks**	**Project Marks**	**Viva Marks**
TSC/N8106: Preparation for fabrication of pultruded composite parts	*Preparation for part manufacturing*	**22**	**53**	-	-
	PC 1. Inspect the pultrusion machine and ensure all systems are operational before starting the shift.	4	8	-	-
	PC 2. Inspect and confirm the readiness of tools, fixtures, and auxiliary equipment required for manufacturing.	3	8	-	-
	PC 3. Verify the availability of necessary tools, jigs, and consumables for part manufacturing.	4	8	-	-
	PC 4. Review work instructions, technical drawings, and specifications	**3**	7	-	-
	PC 5. Check alignment and tension of fiber spools or reinforcement materials before loading	2	7	-	-
	PC 6. Set up and adjust the pulling system, die temperature, and resin bath according to specifications.	3	7	-	-
	PC 7. Conduct a dry run of the machine to identify any potential issues.	3	8	-	-
	Selection of Raw Material and Testing	**28**	**47**	-	-
	PC 8. Identify the type and quantity of raw materials i.e., reinforce fiber, resin, additives etc.	4	8	-	-
	PC 9. Conduct a visual inspection of raw materials to check for damage, contamination, or inconsistencies.	5	7	-	-
	PC 10. Perform quality tests such as resin gel time, cure rate, and fiber tensile strength.	5	6	-	-
	PC 11. Record material properties and test results in compliance with documentation standards.	4	6	-	-
	PC 12. Monitor the mixing of resin, hardener, and additives to ensure proper ratios and homogeneity.	4	8	-	-

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	PC 13. Store and handle raw materials following workplace protocols to maintain quality.	**3**	**6**	-	-
	PC 14. Coordinate with the quality control team to resolve any raw material-related issues.	3	6	-	-
	NOS Total	**50**	**100**	-	-
Module	**Assessment Criteria for Outcomes**	**Theory Marks**	**Practical Marks**	**Project Marks**	**Viva Marks**
TSC/N8107: Carry out Pultrusion Production Activity	*Perform production activity of the pultruded composite parts*	**50**	**80**	-	-
	PC 1. Clean, adjust, and apply lubrication to equipment following the manufacturer's instructions	4	5	-	-
	PC 2. Set the operating parameters of the machine as per SOP	5	7	-	-
	PC 3. Apply proper procedure to startup and operate the machine to meet job specification	5	7	-	-
	PC 4. Load and unload the mold safely from the machine	5	6	-	-
	PC 5. Eject the product from the mold	4	5	-	-
	PC 6. Verify that the dimensions, structural reinforcements, supports, and flanges conform to the job and design specifications.	5	6	-	-
	PC 7. Check and rectify manufacturing defects associated with mold design, mold manufacturing, material properties, process parameters, and machine performance.	5	5	-	-
	PC 8. Monitor complete machine to achieve standard cycle time	3	5	-	-
	PC 9. Check production processes to reduce scrap and trim waste, ensuring compliance with established workplace procedures.	3	6	-	-
	PC 10. Identify the shutdown type and follow the prescribed procedures based on equipment manuals and workplace protocols.	3	6	-	-
	PC 11. Initiate equipment shutdown following the manufacturer's instructions and established workplace protocols.	2	6	-	-
	PC 12. Perform thorough and efficient cleaning of equipment using the specified methods and materials, in strict accordance with the equipment's operational guidelines and maintenance instructions.	2	6	-	-

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	PC 13. Finalize shutdown documentation in accordance with workplace standards, ensuring all procedures and details are accurately recorded.	2	5	-	-
	PC 14. Clear and clean the work area following shutdown, ensuring it is properly prepared for the next startup.	2	5	-	-
	Quality check and finish products	**30**	**40**	-	-
	PC 15. Perform standard shaping, trimming or cutting operations as per job specifications	4	6	-	-
	PC 16. Perform post operations like joining, drilling, painting, and printing on pultruded products to meet job specifications	4	4	-	-
	PC 17. Implement inspection and testing protocols to verify that the output meets job specifications and quality standards, and apply corrective actions to manage nonconforming products.	4	6	-	-
	PC 18. Verify the finished product against the original design and specifications to ensure compliance.	4	6	-	-
	PC 19. Submit the product sample for quality control testing and analysis.	4	5	-	-
	PC 20. Inspect the product to ensure it meets specifications and quality standards, adjusting the final process as needed to align with job requirements.	4	5	-	-
	PC 21. Complete post-production documentation in accordance with established standards and procedures.	3	4	-	-
	PC 22. Maintain accurate records and logbooks, documenting all relevant details as per standard procedures	3	4	-	-
	Advancements in pultrusion technology	**20**	**30**		
	PC 23. Advancement in pultrusion process	4	5		
	PC 24. thermoplastic pultrusion process	2	5		
	PC 25. Utilize advanced pultrusion technologies and automation to enhance production efficiency and product consistency.	3	5		
	PC 26. Sustainable Manufacturing Principle	3	5		
	PC 27. Integrate recycling processes for pultrusion waste to minimize environmental impact and improve material utilization.	4	5		

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	PC 28. Apply sustainability practices throughout the pultrusion process to reduce carbon footprint and resource consumption.	4	5		
	NOS Total	**100**	**150**	-	-
Module	**Assessment Criteria for Outcomes**	**Theory Marks**	**Practical Marks**	**Project Marks**	**Viva Marks**
TSC/N9018: Maintain 5S at work premises: Sort, Set in order, Shine, Standardize and Sustain	*Implement the 5S methodology—sorting, streamlining & organizing*	**14**	**30**	-	-
	PC 1. Perform sorting by verifying that only required tools, fixtures, and jigs are organized on workstations, with all unnecessary items removed to maintain clear and uncluttered machine space/worktable.	2	5	-	-
	PC 2. Implement waste segregation by accurately identifying and separating hazardous and non-hazardous waste according to established sorting work instructions.	2	5	-	-
	PC 3. Adhere to waste disposal and storage techniques by placing waste in designated bins/space according to the standard operating procedures (SOP).	2	4	-	-
	PC 4. Organize tools, equipment, and spare parts according to specifications and utility by placing them in designated trays, cabinets, or lockers, as outlined in the 5S guidelines and work instructions.	2	4	-	-
	PC 5. Separate and store items labeled as red tag items for the process area in designated locations as per guidelines.	2	4	-	-
	PC 6. Stack boxes and containers appropriately by size and utility to prevent falls, breakage, and to facilitate easy sorting when needed.	2	4	-	-
	PC 7. Adhere to the floor and area markings that demarcate various sections in the plant, in accordance with prescribed instructions and standards.	2	4	-	-
	Storage and Documentation Standards	**8**	**13**	-	-
	PC 8. Implement the correct labeling system for instruments, boxes, and containers, and maintain reference files and documents with corresponding codes and lists.	2	4	-	-
	PC 9. Verify that items in designated areas are properly identified as broken or damaged and segregated for repair or disposal.	2	3	-	-

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	PC 10. Perform proper labeling of fluids, oils, lubricants, solvents, chemicals, etc., and verify their correct storage to prevent spillage, leakage, or fire hazards as per given instructions.	2	3	-	-
	PC 11. Store all materials and tools in their designated places and arranged according to the 5S guidelines.	2	3	-	-
	Cleaning and Maintenance of Work Areas	**18**	**35**	-	-
	PC 12. check that the items in the respective areas have been identified as broken or damaged	2	4	-	-
	PC 13. follow the given instructions and check for labeling of fluids, oils. lubricants, solvents, chemicals etc. and proper storage of the same to avoid spillage, leakage, fire etc.	2	3	-	-
	PC 14. make sure that all material and tools are stored in the designated places and in the manner indicated in the 5S instructions	2	3	-	-
	PC 15. Clean safety glasses/mask before use, as per safety protocols.	2	3	-	-
	PC 16. Maintain a clean work environment by ensuring floors are swept, machinery is clean, and safety hazard displays are visible, especially during cleaning operations.	2	5	-	-
	PC 17. Inspect and ensure hoses, cables, and wires are properly cleaned, well-maintained, and securely clamped to prevent accidents or mix-ups during the pultrusion process.	2	5	-	-
	PC 18. Clean workbenches and surfaces to free of debris and in good working condition to avoid defects in pultrusion operations.	2	3	-	-
	PC 19. Adhere to the lighting system cleaning schedule to ensure proper illumination and optimal work conditions for the pultrusion process.	1	3	-	-
	PC 20. Store all cleaning materials and equipment in the designated areas after use, ensuring they are in good condition for future use.	2	3	-	-
	PC 21. Maintain personal cleanliness and hygiene by wearing the prescribed uniform, gloves, helmet, and safety shoes, and following workplace hygiene standards.	1	3	-	-
	Standardization and Sustenance of 5S Practices Across Plant and Office Premises	**10**	**22**	-	-

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	PC 22. Follow the daily cleaning standards and schedules to ensure a clean and organized working environment, minimizing risks during pultrusion operations.	2	5	-	-
	PC 23. Attend and actively participate in all 5S training programs, ensuring understanding of cleaning, organizing, and maintaining workstations in the pultrusion area.	2	5	-	-
	PC 24. Assist the team during 5S audits by ensuring work areas are clean, organized, and compliant with 5S standards, contributing to continuous improvement.	2	4	-	-
	PC 25. Actively engage in workgroups focused on 5S, encouraging fellow team members to actively participate in maintaining cleanliness and order on the shop floor.	2	4	-	-
	PC 26. Adhere to 5S guidelines on dos and don'ts to foster sustainability in the work environment, ensuring safe and efficient pultrusion operations.	2	4	-	-
	NOS Total	**50**	**100**	-	-
Module	**Assessment Criteria for Outcomes**	**Theory Marks**	**Practical Marks**	**Project Marks**	**Viva Marks**
TSC/N9019: Follow machine, safety and organizational guidelines in pultrusion department	*Maintain a Safe and Efficient Workplace*	**16**	**27**	-	-
	PC 1. Conduct essential safety inspections before operating all pultrusion machinery and equipment.	2	3	-	-
	PC 2. Notify the supervisor promptly of any hazards identified during safety inspections.	2	3	-	-
	PC 3. Wear appropriate Personal protective equipment as per workplace policy to perform related tasks safely.	2	3	-	-
	PC 4. Evaluate potential risks before performing tasks that involve manual handling.	2	3	-	-
	PC 5. Perform tasks following safe pultrusion work practices with minimal environmental impact.	2	3	-	-
	PC 6. Return equipment and materials to designated storage areas after each use.	2	3	-	-

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	PC 7. Safely dispose of waste according to procedures in designated disposal areas.	2	3	-	-
	PC 8. Implement safety actions to minimize risk to bystanders.	1	3	-	-
	PC 9. Monitor and adhere to procedures and instructions to control potential risks in pultrusion department.	1	3	-	-
	Follow Emergency Procedures	**14**	**21**	-	-
	PC 10. Report accidents, incidents, or issues immediately to the appropriate authority.	2	3	-	-
	PC 11. Take immediate action to mitigate damage following an incident.	2	3	-	-
	PC 12. Adhere to company standards and procedures for handling accidents, fires, and emergencies.	2	3	-	-
	PC 13. Use emergency equipment following manufacturer instructions and workplace protocols.	2	3	-	-
	PC 14. Administer first aid treatment according to approved techniques for specific injuries.	2	3	-	-
	PC 15. Inspect, clean, test, and store first aid equipment as needed.	2	3	-	-
	PC 16. Document first aid actions in line with workplace reporting procedures.	2	3	-	-
	Adhere to Standard Safety Protocols	**8**	**8**	-	-
	PC 17. Follow standard safety procedures when handling hazardous materials, chemicals, machines, or sharp tools to prevent accidents.	2	2	-	-
	PC 18. Perform preventive measures to guard against leaks, water logging, pests, fire, and pollution.	2	2	-	-
	PC 19. Maintain a goal of zero accidents, damages, or violations of company safety protocols.	2	2	-	-
	PC 20. Keep the work area organized, clean, and free of hazards.	2	2	-	-
	Engage in Safety Awareness Activities	**2**	**4**	-	-
	PC 21. Participate actively in workplace fire drills and safety workshops.	1	2	-	-
	PC 22. Promote awareness of first aid, evacuation procedures, and emergency protocols.	1	2	-	-
	Total NOS	**40**	**60**	-	-

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Module	**Assessment Criteria for Outcomes**	**Theory Marks**	**Practical Marks**	**Project Marks**	**Viva Marks**
DGT/VSQ/N0101: Employability Skills	*Introduction to Employability Skills*	**1**	**1**	-	-
	PC 1. Understand the significance of employability skills in meeting the job requirements	-	-	-	-
	Constitutional values – Citizenship	**1**	**1**		
	PC 2. Identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices	-	-	-	-
	Becoming a Professional in the 21st Century	**1**	**3**	-	-
	PC 3. Explain 21st Century Skills such as Self-Awareness, Behavior Skills, Positive attitude, self- motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc	-	-	-	-
	Basic English Skills	**2**	**3**	-	-
	PC 4. Speak with others using some basic English phrases or sentences	-	-	-	-
	Communication Skills	**1**	**1**	-	-
	PC 5. follow good manners while communicating with others	-	-	-	-
	PC 6. work with others in a team	-	-	-	-
	Diversity & Inclusion	**1**	**1**	-	-
	PC 7. communicate and behave appropriately with all genders and PwD	-	-	-	-
	PC 8. report any issues related to sexual harassment	-	-	-	-
	Financial and Legal Literacy	**3**	**4**	-	-
	PC 9. use various financial products and services safely and securely	-	-	-	-
	PC 10. calculate income, expenses, savings etc.	-	-	-	-
	PC 11. approach the concerned authorities for any exploitation as per legal rights and laws	-	-	-	-
	Essential Digital Skills	**4**	**6**	-	-
	PC 12. Operate digital devices and use its features and applications securely and safely	-	-	-	-
	PC 13. Use internet and social media platforms securely and safely	-	-	-	-

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	Entrepreneurship	**3**	**5**	-	-
	PC 14. identify and assess opportunities for potential business	-	-	-	-
	PC 15. identify sources for arranging money and associated financial and legal challenges	-	-	-	-
	Customer Service	**2**	**2**	-	-
	PC 16. Identify different types of customers	-	-	-	-
	PC 17. Identify customer needs and address them appropriately	-	-	-	-
	PC 18. follow appropriate hygiene and grooming standards	-	-	-	-
	Getting ready for Apprenticeship & Jobs	**1**	**3**	-	-
	PC 19. create a basic biodata	-	-	-	-
	PC 20. search for suitable jobs and apply	-	-	-	-
	PC 21. identify and register apprenticeship opportunities as per requirement	-	-	-	-
	NOS Total	**20**	**30**	-	-

Annexure 7: Assessment Strategy

This section includes the processes involved in identifying, gathering, and interpreting information to evaluate the Candidate on the required competencies of the program.

Mention the detailed assessment strategy in the provided template.

1. Assessment System Overview:
   - Batches assigned to the assessment agencies for conducting the assessment on SDMS/SIP or email
   - Assessment agencies send the assessment confirmation to VTP/TC looping SSC
   - Assessment agency deploys the ToA certified Assessor for executing the assessment
   - SSC monitors the assessment process & records

2. Testing Environment:
   - Confirm that the centre is available at the same address as mentioned on SDMS or SIP
   - Check the duration of the training.
   - Check the Assessment Start and End time to be as 10 a.m. and 5 p.m.
   - If the batch size is more than 30, then there should be 2 Assessors.
   - Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
   - Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).

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- Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
- Check the availability of the Lab Equipment for the particular Job Role.

3. Assessment Quality Assurance levels / Framework:
   - Question papers created by the Subject Matter Experts (SME)
   - Question papers created by the SME verified by the other subject Matter Experts
   - Questions are mapped with NOS and PC
   - Question papers are prepared considering that level 1 to 3 are for the unskilled & semi-skilled individuals, and level 4 and above are for the skilled, supervisor & higher management
   - Assessor must be ToA certified & trainer must be ToT Certified
   - Assessment agency must follow the assessment guidelines to conduct the assessment

4. Types of evidence or evidence-gathering protocol:
   - Time-stamped & geotagged reporting of the assessor from assessment location
   - Centre photographs with signboards and scheme specific branding
   - Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
   - Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos

5. Method of verification or validation:
   - Surprise visit to the assessment location
   - Random audit of the batch
   - Random audit of any candidate

6. Method for assessment documentation, archiving, and access
   - Hard copies of the documents are stored
   - Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage
   - Soft copies of the documents & photographs of the assessment are stored in the Hard Drives

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Annexure 8: Acronym and Glossary

Acronym

Acronym	Description
AA	Assessment Agency
AB	Awarding Body
NCrF	National Credit Framework
NOS	National Occupational Standard(s)
NQR	National Qualification Register
NSQF	National Skills Qualifications Framework

Glossary

Term	Description
National Occupational Standards (NOS)	NOS define the measurable performance outcomes required from an individual engaged in a particular task. They list down what an individual performing that task should know and also do.
Qualification	A formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards
Qualification File	A Qualification File is a template designed to capture necessary information of a Qualification from the perspective of NSQF compliance. The Qualification File will be normally submitted by the awarding body for the qualification.
Sector	A grouping of professional activities on the basis of their main economic function, product, service or technology.

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